

**PATENT  
SUPPLEMENTAL RESPONSE  
EXAMINING GROUP 2414**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of )  
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 ECCLES, Anthony Philip ) Examiner: John Sheehan  
 )  
 Serial No.: 08/637,802 ) Art Unit: 1742  
 )  
 Filed: May 8, 1996 )  
 )  
 For: SILVER ALLOY COMPOSITIONS )  
 Attorney Docket No.: C-35469

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**SUPPLEMENTAL RESPONSE**

Hon. Commissioner of Patents  
and Trademarks  
Box AF  
Washington, D.C. 20231

December 16, 1998

Sir:

In addition to the Remarks Section of the Rule 116 Amendment filed on September 16, 1998, and now entered in the present application, Applicant further believes the present application is allowable for the following reasons.

The silver alloy composition of Claim 1 contains at least 86% silver by weight and no more than 5.5% copper by weight. The silver alloy composition of Claim 1 also contains low concentrations of zinc and silicon in a combined amount similar to the copper concentration of Claim 1. The zinc and silicon in the silver alloy of Claim 1 act to deoxidize the silver alloy composition during the melting process, thus increasing the fire scale resistance of the resulting alloy. Additionally, the claimed invention contains a small amount of germanium which improves the work hardenability of the silver copper alloy during post-melt processing

such as casting, hot working or annealing, when the silver alloy composition remains hot after it has been solidified. The trace amount of germanium in the silver alloy composition of the present invention is believed to increase the hardenability of the alloy by remaining in solid solution during post melt hot processes described above, rather than sacrificially consumed in these processes. Rather than acting as a sacrificed element, preferred over the copper in the alloy and oxidized first to reduce fire staining, the germanium is believed to remain in solid solution and not form germanium oxide gas which would invite spawling or void formation in the worked piece of sterling silver. The zinc and silicon of the silver alloy of the claimed invention are instead oxidized in the composition during the melting process rather than the germanium or the small amount of copper in the alloy. The silver alloy composition of the claimed invention is particularly useful for jewelry making due to its high silver content, low copper content, and its improved work hardening performance over known fire scale resistance silver alloys.

There is no disclosure in *GB 2,255,348* to include one or a mixture of zinc and silicone in a sterling or near sterling silver alloy. In fact the '348 British patent on page 3 lines 27-29 teaches against the use of silicone in silver alloy compositions based on the silicone being insoluble in silver and thus giving rise to alloys which are brittle to varying degrees. The compositions of the present invention do not exhibit brittleness and in fact are work hardenable to a very useful degree. There is no suggestion in the '348 British patent to combine silicone or zinc with germanium in a sterling or near sterling silver alloy in order to predict the complex alloy of the present invention from the disclosure of the British reference.

There is no disclosure in *Bernhard* to add germanium to a silver copper alloy composition. *Bernhard* does not address the unique problems associated with increasing the work hardenability of a fire scale resistant silver alloy during the post melt processing which is required for jewelry making and other fine silver applications. *Bernhard*, which was disclosed by applicant to the Examiner, addresses the problems associated with increasing the fire scale resistance in the melt of a silver copper alloy, and provides no suggestion to use germanium.

Melvin Bernhard, the inventor of the *Bernhard* patent, has signed a Declaration under Rule 132, submitted herewith, providing further evidence supporting the novelty and non-obviousness of the claimed invention. As declared, Melvin Bernhard established the United Precious Metal Refining Company, Inc. (United Precious Metal) of Albany New York, a significant manufacturer of jewelry grade and other high grade silver alloys for the jewelry, flatware, fine housewares, and minting industries.

Mr. Bernhard is the Vice President of United Precious Metal and has been in charge of Research and Development since 1988, when the company incorporated. United Precious Metal is an innovative developer of new metallic alloys and has patented its own sterling silver alloy compositions having good fire scale resistance, as disclosed in its U. S. Patent No. 5,039,479 (*Bernhard et al*) filed in September 1990. As early as September 1990, United Precious Metal had developed sterling and near-sterling silver alloys having good fire scale resistance and appearing to be ideal for the jewelry industry, but for their soft consistency exhibited during post-melt processing.

The Bernhard '479 Patent issued in August of 1991 and the '348 British patent discussed above was first filed in April 1991 and published in November 1992. The British patent was published a full year prior to the first filing of the present application, and United Precious Metal clearly did not look to the British patent for any teaching in improving the work hardenability of their fire scale resistant silver copper alloys. United Precious Metal failed to find a solution to the soft consistency of their fire resistant silver alloys for years after filing their Bernhard '479 patent. In fact fire scale resistant silver alloys had been known in the industry since 1970, and until the present invention, no one added germanium to these high silver content alloys in order to increase their hardenability over other fire scale resistant alloys.

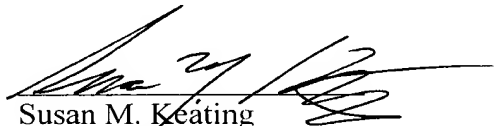
United Precious Metal Refining Company, Inc., chose to license applicant's technology for increasing the work hardenability of fire scale resistant silver/copper alloys. United Precious Metal Refining Company, Inc. licensed the technology of the present invention in 1994, four years after it filed its Bernhard '479 patent. It can be assumed that United Precious Metal would not act in a fashion contrary to their economic interest unless convinced of the patentability of the present invention. It could only be concluded that United Precious Metal Refining Company, Inc., having the means and motivation to develop their fire scale resistant high silver content silver/copper alloy into an alloy with improved work hardenability, and more suitable for the jewelry industry, certainly found no obvious teachings in the art at the time the present invention was made.

United Precious Metal increased its sale of sterling silver alloys by at least 80% since 1995. The silver alloy compositions of the present invention account for 62% of the

sterling silver alloys sold by United Precious Metal so far in 1998. This percentage is up from 36% of the total sterling silver alloys sold by United Precious Metal in 1995, the first full year under the license agreement. Mr. Bernard has stated that, there has not been any increase in advertising conducted for the alloy of the claimed invention over the other silver alloys sold by United Precious Metal, yet the silver alloy of the claimed invention became the preferred metal of choice of United Precious Metal customers.

The foregoing objective evidence of the commercial success of the silver alloy compositions of the present invention illuminate the technological and commercial environment of the invention at the time the invention was made, further evidencing the novel and non-obvious combination of the elements of the silver alloy of the present invention. In view of the above arguments, applicant believes the claims of the present application are allowable.

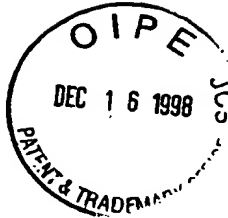
Respectfully submitted,



Susan M. Keating  
Attorney for Applicant  
Attorney Registration No. 41,887

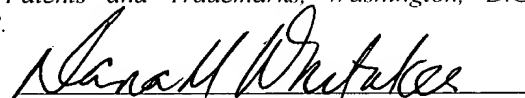
DVORAK & ORUM  
53 West Jackson Boulevard  
Chicago, IL 60604  
Telephone: 312/ 922-6262  
Fax: 312/922/7747

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